IS 2339 : 2013
(Amalgamating IS 165 : 1950 and IS 166 : 1950)
(Reaffirmed 2018)

भारतीय मानक

सामान्य प्रयोजनों के लिए एल्यूमीनियम रंग रोगन — विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

ALUMINIUM PAINTS FOR GENERAL PURPOSES — SPECIFICATION

(First Revision)

ICS 87.040

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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Paints Varnishes and Related Products Sectional Committee, CHD 20

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints, Varnishes and Related Products Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1963 amalgamating the revision of IS 165 : 1950 'Specification for aluminium paint, brushing, for general purposes, in dual container' and IS 66 : 1950 'Specification for aluminium paint, spraying, for general purposes in dual container', which were first issued in 1950. These two specifications were based on the interim coordinated draft, complied with the assistance of all concerned by the Coordinating Subcommittee of the No. 5 Standing Committee on Specifications for Paints and Allied Stores of the General Headquarters, India (now Army Headquarters), Master General of the Ordnance Branch, which was set up in 1942 and continued to function till 1947. The Committee combined the two separate specifications and gave the spraying and brushing qualities of the material as two types in this amalgamated standard. Full alignment of JSS 3022 'Specification for paint, PFU, aluminium, brushing/spraying', issued by the Department of Standardization, Ministry of Defence, Government of India, has also been achieved with that Indian Standard as it fully covered the requirements prescribed in JSS 3022.

Revision of this Indian Standard has been taken up with a view to incorporate the limit of lead restriction in this standard. The Committee responsible for formulation of this standard observed that in practice most of the paints like this paint are used for household/decorative as well as in industrial/commercial applications. Taking cognizance of the fact that lead exposure of human being, particularly children in residential premises is injurious to health and having adverse impact on human health and safety, the Committee felt the need to introduce lead restriction in all paints standards likely to be used for household and decorative purposes.

The Committee observed that this is extensively used for household/decorative purposes in addition to use for industrial/commercial applications. It is also technologically feasible to formulate this product with very low maximum permissible limit of lead. Therefore, in this revision the requirement of maximum permissible limit of lead restriction has been kept as 90 ppm. This limit has been prescribed keeping in view of the scope for exposure to children to the paint once dried and also aiming at avoiding hazardous impact of lead on environment and health of living beings. Further, majority of consumers are not aware of the consequences of lead toxicity and its long term implications to human health. Therefore, in this revision, along with lead restriction, a suitable cautionary notice has been included in the marking clause. Reference has been given to various parts/sections of IS 101 for the requirements given in the standard.

This standard is one of a series of Indian Standards on aluminium paint and components. The other specifications published so far in the series are:

IS No.	*Title*
289 : 1963	Aluminium paste for paints (*revised*)
642 : 1963	Varnish medium for aluminium paint (*under print*)

This standard is intended chiefly to cover the technical provisions relating to aluminium paint for general purposes, in dual container, and it does not include all the necessary provisions of a contract.

The Committee responsible for the formulation of this standard is given in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ALUMINIUM PAINTS FOR GENERAL PURPOSES — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard prescribes the requirements and the methods sampling and of test for the material commercially known as aluminium paint for general purposes. Use of this paint intended for use in painting system for protection and household/decorative purposes as well as for commercial or industrial applications also.

1.2 The ready mixed paint obtained by mixing the materials in the two chambers/containers is used for protective and decorative purposes, particularly where a heat-reflecting surface is required. The use of this material is extended to appliances connected with ammunition.

2 REFERENCES

The standards listed in Annex A contains provisions which though reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 1303 shall apply.

4 TYPES

4.1 There shall be two types of the material:

a) Brushing; and
b) Spraying.

4.1.1 The type of material required, whether brushing or spraying, shall be stated in the contract.

5 REQUIREMENTS

5.1 Composition

The ready mixed material shall be obtained by mixing aluminium paste conforming to IS 289 and a varnish medium conforming to IS 642 contained in separate chambers of the dual container. The ingredients shall be provided in such proportions that, when mixed, the material shall contain not less than the equivalent of 15 percent by weight of aluminium powder, the remainder being a medium, and the ready mixed material shall contain not more than 50 percent of volatile matter.

NOTE — When varnish medium is more than 4 litre, aluminium paste may be packed separately.

5.1.1 The leafing property of the aluminium pigment in the ready mixed material, when tested within 4 h of mixing, shall not be inferior to the leafing property of aluminium paste conforming to IS 289.

NOTE — Leafing property shall be examined after the leafing comes to rest, but not later than 30 min.

5.2 Lead Restriction

The material shall be tested for restriction from lead in accordance with IS 101 (Part 8/Sec 5). When thus tested the material shall not contain lead or compounds of lead or mixtures of both, calculated as metallic lead more than 90 ppm.

5.3 The material shall also comply with the requirements given in Table 1.

6 PACKING AND MARKING

6.1 Packing

The paint shall be packed in dual container. However, when varnish medium is more than 4 litre, aiuminium paste may be packed separately. The packing is subject to the provisions of the law in force in the country at that time.

6.2 Marking

6.2.1 Each container shall be marked with the following:

a) Name of the material;
b) Indication of the source of manufacture;
c) Lead content (Maximum);
d) Volume of the material;
e) Batch number or lot number in code or otherwise;
f) Month and year of manufacture;
g) Colour/shade of the material; and

Table 1 Requirements for Aluminium Paint for General Purposes

(*Clauses* 5.3 *and* 8.1)

Sl No.	Characteristic	Requirement	Methods of Test, Ref to	
			IS 101	Annex
(1)	(2)	(3)	(4)	(5)
i)	Drying time, *Max* hard dry, h	8	(Part 3/Sec 1)	—
ii)	Consistency	Smooth and uniform and suitable for brushing or spraying	—	B
iii)	Finish	Bright, lustrous and smooth	(Part 3/Sec 4)	—
iv)	Mass, *Min*	9 kg/10 litre; However it shall be within ± 3 percent of the approved sample, if any	(Part 1/Sec 7)	—
v)	Wet opacity	Between –10 percent and +20 percent of the approved sample, if any	(Part 4/Sec 1)	—
vi)	Flexibility and adhesion, bend test using Type 1 apparatus and 6.25 mm dia Mandrel	No visible damage or detachment of film	Clause **2** of (Part 5/Sec 2)	—
vii)	Resistance to humidity under condition of condensation	No sign of corrosion	Clause **2** of (Part 6/Sec 1)	—
viii)	Flash point	Not below 30°C	(Part 1/Sec 6)	—
ix)	Keeping properties	Not less than one year from the date of manufacturing	(Part 6/Sec 2)	—

h) A cautionary note as below:
  1) Keep out of reach of children.
  2) Dried film of this paint may be harmful, eaten or chewed.
  3) This product may be harmful, swallowed or inhaled.

6.2.2 *BIS Certification Marking*

The container may also be marked with the Standard Mark.

6.2.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act,* 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6.3 Other details of packing and marking shall be in accordance with the instructions given by the purchaser.

6.4 The material, when intended for defence purposes, shall be packed and marked in accordance with IS 5661.

7 SAMPLING

7.1 The supplier shall submit a tender sample packed in three different containers, each containing not less than 500 g of the components.

7.2 Representative samples of the components shall be drawn as in IS 101 (Part 1/Sec 1)

7.2.1 The proportion of the paste and medium sampled shall be the same as packed in dual containers.

8 TESTS

8.1 Tests shall be conducted as prescribed in **5.1** and **5.2** and the test methods referred in col 4 and col 5 of Table 1.

8.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

8.3 Preparation of Test Panels for Tests

8.3.1 *For Drying Time Test*

Prepare a mild steel plate panel of 150 mm × 100 mm × 1.25 mm as described in **2** of IS 101 (Part 1/Sec 3). Apply the aluminium paint uniformly on each side of the panel by brushing to give a dry film mass commensurate with the mass per 10 litre as specified in Table 1 of IS 101 (Part 3/Sec 4). Prepared test panel then subjected to the test as specified in IS 101 (Part 3/ Sec 1) as soon as possible.

8.3.2 *For Flexibility and Adhesion Test*

Prepare a panel of 100 mm × 50 mm × 0.3 mm burnished tin plate as described in **3** of IS 101 (Part 1/Sec 3). Apply the aluminium paint uniformly on one side of the panel by brushing to give a dry film thickness about 15 micron. Allow to dry for 24 h at room temperature and then at a temperature of 60° to

65°C for 1 h. Cool the panel to room temperature. Determine the thickness in micron, of the dry coating, by any appropriate method but using any one of the non-destructive procedures as specified in IS 101 (Part 3/Sec 2). Prepared test panel then shall be conditioned at 27 ± 2°C and 65 ± 5 percent relative humidity for a minimum of 16 h. Prepared test panel then subjected to the test as specified in **2** of IS 101 (Part 5/Sec 2) as soon as possible.

8.3.3 *For Resistance to Humidity Test*

Prepare a panel of 150 mm × 100 mm × 1.25 mm mild steel plate as described in **2** of IS 101 (Part 1/Sec 3). Apply the aluminium paint on both sides of the panel by brushing to give a dry film thickness on each side about 20 micron. Allow to dry for 24 h at room temperature and then at a temperature of 60 to 65°C for 1 h. Cool the panel to room temperature. Determine the thickness in micron, of the dry coating, by any appropriate method but using any one of the non-destructive procedures as specified in IS 101 (Part 3/Sec 2). Then protect the edges to a depth of 5 mm with a suitable protective composition [preferably consisting of 3 parts by weight of paraffin wax (melting point 60°C) and 1 part by weight of carnauba wax] which shall have melting point above 50°C. Prepared test panel then subjected to the test as specified in **2** of IS 101 (Part 6/Sec 1).

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
101	Methods of sampling and test for paints, varnish and related products:
(Part l)	Test on liquid paints (general and physical),
(Sec 1) : 1986	Sampling (*third revision*)
(Sec 3) : 1986	Preparation of panels (*third revision*)
(Sec 5) : 1989	Consistency (*third revision*)
(Sec 6) : 1987	Flash point (*third revision*)
(Sec 7) : 1987	Mass per 10 litre (*third revision*)
(Part 3)	Tests on paint film formation
(Sec 1) : 1986	Drying time (*third revision*)
(Sec 2) : 1989	Film thickness (*third revision*)
(Sec 4) : 1987	Finish (*third revision*)
(Part 4/Sec 1) : 1988	Optical tests on paint films Opacity (*third revision*)
(Part 5/Sec 2) : 1988	Mechanical tests, Section 2 Flexibility and adhesion (*third revision*)
(Part 6)	Durability tests on paint films,
(Sec 1) : 1988	Resistance to humidity under conditions of condensation (*third revision*)
(Sec 2) : 1989	Keeping properties (*third revision*)
(Part 8/Sec 5) : 1990	Tests for pigments and other solids, Section 5 Lead restriction test (*third revision*)
289 : 1963	Alumunum paste for paints
642 : 1963	Varnish medium for aluminium paint (*revised*)
1070 : 1992	Reagent grade water (*third revision*)
1303 : 1983	Glossary of terms relating to paints (*second revision*)
5661 : 1970	Code of practice for packing and marking of packages of paints, enamels, varnishes and allied products

ANNEX B

[*Table* 1, *Sl No.* (ii)]

CONSISTENCY

B-1 APPARATUS

B-1.1 Palette Knife or Metal Rod

B-1.2 Steel Panels

B-1.2.1 Unless specified otherwise, mild steel panels of size 150 mm × 50 mm × 1.25 mm shall be prepared as prescribed in **2** of IS 101 (Part 1/Sec 3).

B-2 PROCEDURE

B-2.1 Insert a clean metal rod or palette knife into the original container and examine the nature of settling.

B-2.2 Observations

The material shall not cake hard inside the container and shall be in such a condition that stirring easily produces a smooth uniform paint suitable for brushing on steel panels.

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Paints, Varnishes and Related Products Sectional Committee, CHD 20

Organization	*Representative(s)*
National Test House, Kolkata	Dr Sunil Kumar Saha (***Chairman***)
Akzo Nobel Coatings India Pvt Ltd, Bengaluru	Dr T. Kanakaraju
Asian Paints Ltd, Mumbai	Dr B. P. Mallik
Berger Paints India Ltd, Howrah	Dr B. Bera
Bharat Heavy Electricals Ltd, Tiruchirapalli	Shri L. Gragori
Central Building Research Institute, New Delhi	Dr S. R. Karde Dr P. C. Thapliyal (*Alternate*)
Central Public Works Department, New Delhi	Shri Manoj Kumar Talreja Shri Gurbax Singh (*Alternate*)
Clariant Chemicals (India) Ltd, Thane	Shri Nitin Vaidya Shri Umesh Kapoor (*Alternate*)
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Naval Materials Research Laboratory (NMRL), Thane	Shri S. K. Singh Shri V. R. More (*Alternate*)
Office of the Micro Small & Medium Enterprises (MSME), New Delhi	Dr Izzatullah Dr S. K. Sharma (*Alternate*)
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Member Secretary
SHRI K. K. PAUL
Scientist 'E' (CHD), BIS

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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